

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION**

PARKERVISION, INC.,

Plaintiff,

v.

MEDIATEK INC. AND MEDIATEK USA
INC.,

Defendants.

Case No. 6:22-cv-01163-ADA

JURY TRIAL DEMANDED

**PLAINTIFF PARKERVISION, INC.'S
SUR-REPLY CLAIM CONSTRUCTION BRIEF**

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I. INTRODUCTION

MediaTek’s reply brief does little to address the substantive arguments raised in ParkerVision’s brief. Instead, MediaTek raises irrelevant arguments to distract from the real issues, and rehashes the same flawed arguments made in its opening brief.

II. TERMS PREVIOUSLY CONSTRUED

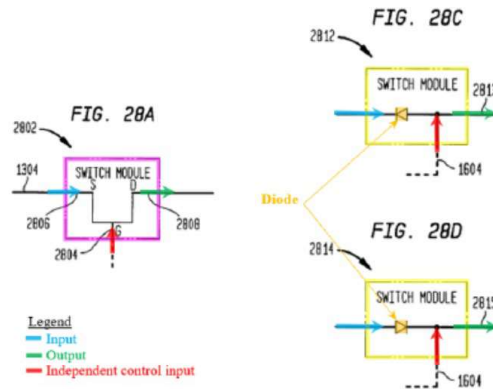
A. “storage element”; “storage module”; “storage device” (’835 patent, claims 1, 3, 4, 18, 20; ’513 patent, claim 19; ’518, claim 16)

On December 15, 2023, in an appeal related to IPR2020-01265 (ParkerVision’s U.S. Patent No. 7,110,444), the Federal Circuit held that “a ‘storage element’ is ‘an element of a system that stores non-negligible amounts of energy from an input EM signal.’” Dkt. No. 57-1 at 15. ParkerVision notes that another appeal in IPR2021-0990 relating to the same patent and claim term is currently pending before the Federal Circuit.

B. “switch” (’706 patent, claims, 86, 87, 88, 91, 93; ’835 patent, claims 18, 19, 20; ’513 patent, claim 19)

MediaTek does *not* dispute that the opening/closing of the switch is dictated by a control input. Unable to come up with any other argument to address the language “as dictated by an independent control input,” MediaTek focuses on the term “independent” and complains that ParkerVision “never explains what it means by ‘independent.’” Dkt. No. 53 (“Reply Br.”), at 8-9. Not only is the word “independent” clear on its face, but MediaTek is simply wrong.

ParkerVision’s responsive brief specifically discusses examples of an “independent” control input. *See* Dkt. No. 50 (“PV Resp. Br.”) at 16. For example, Figures 28A, 28C and 28D each disclose embodiments depicting a switch module having an input, output, and independent control input.



And ParkerVision provides an example of how a control input is “independent.” *Id.*, at 11 n. 7.

Recognizing it has a problem, MediaTek resorts to misrepresenting the patent specification. In particular, MediaTek states that “the ’518 patent mentions that the control signal may be equivalent to the input signal or a harmonic or subharmonic thereof, which would create a form of dependence between the input and the control input.” Reply Br., 9 (citing ’518 patent, 83:19-31). But the actual specification language belies MediaTek’s position. What the patent actually states is that “to directly down-convert the AM signal 616 to a demodulated baseband signal, the aliasing rate is substantially equal to the frequency of the AM signal 616 or to a harmonic or sub-harmonic thereof.” ’518 patent, 83:19-31. Thus, contrary to MediaTek’s contorted characterization, the patent simply specifies the frequency of the control signal (e.g., substantially equal to the frequency of the AM signal) for direct down-conversion embodiments. In no way does the disclosure teach or suggest that the control signal is somehow equivalent to the input signal, as MediaTek suggests.

For the foregoing reasons, ParkerVision’s construction should be adopted.

C. “harmonic[s]” (’706 patent, claims 8, 19; ’518 patent, claim 1)

MediaTek’s reply brief does not raise any new issues regarding the term “harmonic[s].” See Reply Br., 9. For the reasons set forth in ParkerVision’s responsive claim construction brief, ParkerVision’s constructions should be adopted.

D. “under-sampling” (’706 patent, claims 8, 9, 19)

MediaTek does *not* dispute that “under-sampling” is “sampling at an aliasing rate.”

Instead, with nothing of substance to argue, MediaTek merely complains that ParkerVision’s construction (and the Court’s prior construction) of “sampling at an aliasing rate” does not include the concept that the aliasing rate is related to an “input signal.” Reply Br., 10. But MediaTek’s argument rests on the *false* premise that this concept is not already in the claims in which the term “under-sampling” appears.

When the patentee wanted to clarify that the aliasing rate pertains to an “input signal,” the patentee did so. Indeed, claims 8, 9, and 19 of the ’706 patent each recite “under-sampling *said input signal*.”

For the foregoing reasons, ParkerVision’s construction should be adopted.

E. “A cable modem for down-converting an electromagnetic signal having complex modulations” (’835 patent, claim 1)

Contrary to MediaTek’s position, the entire preamble of claim 1 of the ’835 patent, including “a cable modem,” is limiting.

First, MediaTek asserts that ParkerVision’s antecedent basis argument fails because “cable modem” does not provide antecedent basis for any term found in the body of claim 1. *See* Reply Br., 12. But such a position ignores Federal Circuit law. In *Pacing Techs., LLC v. Garmin Int’l, Inc.*, the Federal Circuit held the *entire preamble* of the independent claim *was limiting* where the term “user” in the preamble provided antecedent basis for a term in the body of the independent claim and the term “repetitive motion pacing system” (also in the preamble) provided antecedent basis for that term in a dependent claim. 778 F.3d 1021, 1024 (Fed. Cir. 2015). The facts in this case are similar to *Pacing*. Here, the term “an electromagnetic signal” provides antecedent basis for a term in the body of independent claim 1 and the term “cable

modem” (also in the preamble) provides antecedent basis for a term in dependent claims 16 and 17. As such, the entire preamble is limiting.¹

Second, MediaTek ignores the technical significance of the term “cable modem” in the preamble and, instead, contends that “cable modem” merely provides context or intended use. *See* Reply Br., 10-11. But the recitation of “cable modem” in claim 1 is necessary to understand the subject matter encompassed by the claim, which otherwise generally recites circuitry for down-converting a signal. Unlike non-limiting preamble terms, “cable modem” does not merely state a name or a use for the claimed circuitry. Instead, the term describes a “fundamental characteristic of the claimed invention” that informs a POSITA as to the structure required by the claim. *See Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004). As a mo-dem, the claimed invention must be capable of performing *modulation* and *demodulation*. The claims recite the down-conversion portion (demodulator) of the modem, which must operate in the presence of a modulator.²

Finally, MediaTek contends that ParkerVision’s construction lacks intrinsic support. *See* Reply Br., 11-12. Not so. MediaTek simply ignores that the specification distinguishes between “cable modems” and conventional “data modems.” *See* ’835 patent, 36:19-25. Moreover, MediaTek ignores the title of the ’835 patent— “Wireless and wired *cable modem applications* of universal frequency translation technology”—and the abstract describing the claimed

¹ Even if the Court finds the term “cable modem” non-limiting as to claim 1, the term should be limiting as to dependent claims 16 and 17. *See SEVEN Networks, LLC v. Apple Inc.*, 2020 U.S. Dist. LEXIS 55476, at *87 (E.D. Tex. Mar. 31, 2020) (“In some cases, the preamble of the independent claim may be limiting as to a dependent claim but not as to the independent claim from which the dependent claim depends.”).

² As ParkerVision previously explained, a POSITA understands that a “modem” is a device that performs *both* modulation *and* demodulation. PV Resp. Br. at 20. Thus, the claims are directed to a receiver that operates “in the face of potential jamming signals” from a transmitter. ’835 patent, 14:8-12.

invention as “including cable modem applications.”³ Dkt. No. 46-3 at 2.

For the foregoing reasons, the entire preamble should be found to be limiting.

III. ADDITIONAL DISPUTED TERMS FOR CONSTRUCTION

A. “delaying said down-converted input samples” (’706, claim 8)

None of the words in the disputed term are unclear, nor has MediaTek argued that they are unclear. Instead, MediaTek seeks to change the plain meaning of the claim language in order to *limit* the claims to *embodiments* with a holding capacitor and *exclude* a disclosed *embodiment* – analog delay lines.⁴ This is improper.

“Holding” is *one way* of delaying a signal. But, contrary to MediaTek’s position, there is nothing in the patent that limits the step of “delaying” to “holding.” *First*, where the patentees wanted to limit the scope of the claims to a particular sample-and-hold embodiment, they explicitly used the term “holding” in the claim language. *See* ’706 patent, claim 78 (reciting “sampling and *holding* said output signal.”). *Second*, MediaTek’s supporting citations are clearly described in the specification as *embodiments*. Indeed, the ’706 specification repeatedly states that the invention is *not* limited to delay modules implemented using sample-and-hold circuits (holding capacitors). *See, e.g.*, ’706 patent, 34:63-67 (“Instead, the *delay modules* in the UDF module *can be implemented using any apparatus or circuit that operates to delay* an incoming signal by a predetermined amount”)⁵; *id.* at 32:52-55 (“Alternatively, well known delay circuits or processors/software can be utilized, as will be apparent to persons skilled in the relevant art(s)

³ All portions of a patent are relevant for claim construction, including the title (*Ruckus Wireless, Inc. v. Innovative Wireless Sols., LLC*, 824 F.3d 999, 1003 n.2 (Fed. Cir. 2016)) and the abstract (*Tate Access Floors, Inc. v. Maxcess Techs., Inc.*, 222 F.3d 958, 965 n.2 (Fed. Cir. 2000)).

⁴ In fact, MediaTek’s argument regarding this term— that “[t]his term does not refer to any form of inherent delay caused by transmission of a down-converted sample through a circuit or circuit element” (Dkt. No. 48 (“Op. Br.”) at 19)— makes MediaTek’s goal immediately clear: exclude analog delay lines.

⁵ Unless otherwise noted, all emphasis has been added.

based on the teachings contained herein.). *Third*, the specification expressly discloses analog delay line embodiments that perform the function of delaying *without* holding samples. PV Resp. Br. at 21-22.

Recognizing it is reading out an embodiment, in its reply brief, MediaTek tries to explain away “analog delay lines.” But it is too late. In its opening brief, MediaTek already made a key *admission* that belies its new argument in its reply brief. In particular, in its opening brief, MediaTek asserts that “‘delay’ is always designed to *impede* or hold a signal for a known amount of time.” Op. Br., 19. Thus, MediaTek acknowledges that analog delay lines can perform the function of delaying by *impeding* samples instead of holding samples. Accordingly, MediaTek already admitted that “holding” is just one example of delaying a sample.

For the foregoing reasons, the term should be given its plain and ordinary meaning.

B. “in an integrated manner” (’706 patent, claim 19)

Defendant’s reply brief does not raise any new issues regarding the term “in an integrated manner.” *See* Reply Br. at 13-14. For the reasons set forth in ParkerVision’s responsive claim construction brief, the term should be given its plain and ordinary meaning.

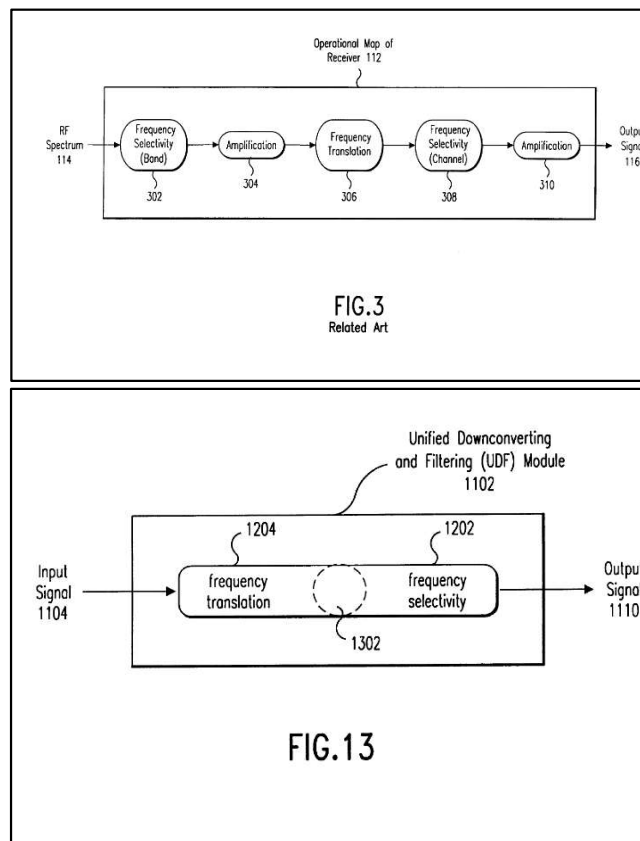
IV. TERMS DEFENDANTS ALLEGE ARE INDEFINITE

A. “wherein step (2) is at least partially integral with step (1)” (’706 patent, claim 17)

MediaTek feigns ignorance of the term’s meaning, continuing to read the claim language in the abstract and isolated from the specification. Indeed, MediaTek’s only argument is that a dictionary definition of “integral” (extrinsic evidence) renders the phrase “partially integral” logically incoherent. Not only is this extrinsic evidence irrelevant to the Court’s construction of the term, but MediaTek’s position simply ignores the relevant portions of the intrinsic record. At bottom, MediaTek does not even attempt to understand the term.

As ParkerVision pointed out in its responsive brief, the claim containing the disputed term aligns with the description of a unified down-converting and filter (UDF) module as depicted in e.g., Figures 11-13 of the '706 patent. And the specification explains that the frequency translation operation (e.g., step 1 - under-sampling) and input filtering operation (e.g., step 2 - delaying) can be performed “concurrently.” *See* PV Resp. Br., 24 (citing '706 patent, 13:53-58).

Contrary to MediaTek’s position, that the patent uses “concurrently” instead of “integral” is beside the point. A POSITA understands that “partially integral” means partially concurrent. Indeed, the specification provides a POSITA with guidance as to the meaning of “partially integral” by distinguishing the operation of the UDF module from a conventional receiver.



In a conventional receiver 112 (as shown in Figure 3 (above top)), each component performs a separate function: “the components which perform the frequency selectivity operation

302, 308....are *different* from the component that performs the frequency translation operation 306.” ’706 patent, 14:32-36. On the other hand, as shown in Figure 13 (above bottom), the same component of the UDF 1102 module can be involved in performing multiple functions: “The *overlapping area 1302* depicted in FIG. 13 indicates that the operations relating to the frequency translation 1204 *also contribute to* the performance of frequency selectivity 1202, and/or vice versa.” ’706 patent, 14:52-56. Thus, two functions can be occurring concurrently.

Because the specification “inform[s] those skilled in the art about the scope of the invention with reasonable certainty,” MediaTek fails to demonstrate indefiniteness. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014); *see Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017) (“Indefiniteness must be proven by clear and convincing evidence.”). As such, the term is not indefinite and should be given its plain and ordinary meaning.

B. “pulse widths that are established to improve energy transfer from said input signal to said down-converted image” (’706 patent, claim 18)

The claim term is straightforward – as pulse widths are increased (to non-negligible apertures), a switch controlled by those pulses will be ON (closed) for a longer period of time, and more energy is being transferred to e.g., a storage device (capacitor) from an input signal. This, in turn, improves the energy transfer from the input signal.

Instead of substantively addressing ParkerVision’s argument, MediaTek simply ignores it. Having no answer, MediaTek tries to confuse the issue and sets out an entire paragraph full of irrelevant discussion on impedance matching, hoping this will demonstrate indefiniteness. It does not. *See, e.g.*, Dkt. No. 50-4 (“Steer 945 Decl.”) at ¶¶82-88.

MediaTek’s other arguments are similarly meritless. *First*, MediaTek asserts that because the term “non-negligible apertures” is found in claims 88, 91, 96, 106, 111 of the ’706 patent, the disputed term “pulse widths that are established to improve energy transfer from said input signal

to said down-converted image” in claim 18 cannot be related to the use of “non-negligible apertures.” This is nonsense. Claims 88, 91, 96, 106, 111 do not depend on claim 18 and a patentee is entitled to vary the scope of different claims by using different language to capture similar concepts. *See, e.g., Curtiss-Wright Flow Control Corp. v. Velan, Inc.* 438 F.3d 1374, 1380 (Fed. Cir. 2006) (“Indeed this court has acknowledged that two claims with different terminology can define the exact same subject matter.”).

Second, MediaTek asserts that it is unclear how a skilled person would measure an improvement in energy transfer. But the claim has nothing to do with the *amount* of improvement. Instead, the claim only requires improvement in energy transfer. And the specification provides guidance to a skilled person as to how to improve energy transfer. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) (“Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.”). In particular, the specification states that energy transfer is “improved” by using “*non-negligible apertures*” instead of negligible apertures. *See* PV Resp. Br., 26.

For the foregoing reasons, the term is not indefinite and should be given its plain and ordinary meaning.

C. “wherein said down-converting operation is performed so as to improve energy transfer from said input signal to a down-converted image” (’706 patent, claim 26)

MediaTek’s reply brief does not raise any new argument but instead, points to its discussion of the disputed term “pulse widths that are established to improve energy transfer from said input signal to said down-converted image.” For the reasons set forth in ParkerVision’s responsive claim construction brief (and as set forth in Section IV.B above), this term is not indefinite and should be given its plain and ordinary meaning.

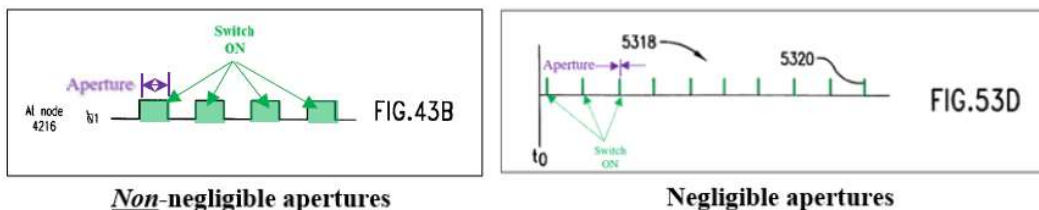
D. “tend[s] away from zero time in duration” (’518 patent, claim 3; ’706 patent, claims 88, 91, 96)

MediaTek asserts that the absence of a specific numerical boundary in the specification between pulses having non-negligible apertures and pulses having negligible apertures constitutes a lack of construability, so as to render the term indefinite. Reply Br., 16. But that is not the standard for indefiniteness. The law only requires that the specification provides *guidance* (and *objective bounds*) to a skilled person (who can impart his/her own knowledge of circuits) as to what it means to widen the apertures of pulses by an amount that “tend[s] away from zero time in duration.” See *Nautilus.*, 572 U.S. 898 at 910; *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005). And that is what the specification does here.

In particular, the specification explains the size/width of the aperture can be selected so that the UFT module will have a lower input impedance that can substantially match a source impedance of an input signal and improve energy transfer and e.g., the signal to noise ratio.

In another embodiment, the pulses of the control signal 5306 have non-negligible apertures *that tend away from zero*. This makes the UFT module 5302 a lower input impedance device. This allows the *lower input impedance of the UFT module 5302 to be substantially matched with a source impedance of the input signal 5304*. This also improves the energy transfer from the input signal 5304 to the down-converted output signal 5312, and hence the efficiency and signal to noise (s/n) ratio of UFT module 5302.

’706 patent, 32:9-18; *see also* Steer 945 Decl., ¶ 86. A POSITA can apply their knowledge of circuits to determine, for a specific system, what aperture size/width will accomplish these goals.



Indeed, the specification shows examples of how to increase the aperture size/width in an

amount that tends away from zero. For example, as shown in Figure 43B (above left), the pulses (green) with *non-negligible* apertures (purple) have widths that are *greater than* the pulses (green) with negligible apertures (purple) of Figure 53D (above right). Because pulses with *non-negligible* apertures have a *greater width* than pulses with negligible apertures, the switch 5308 is ON (closed) *longer* than it would be if negligible apertures were used. The switch being ON longer results in non-negligible energy being transferred to the capacitor 5310. This is the way in which “pulse widths have non-negligible apertures that tend away from zero,” and “extend the time that said switch is closed for a purpose of increasing energy transferred from said input signal.” *See* PV Resp. Br., 27-30.

For the foregoing reasons, the term is not indefinite and should be given its plain and ordinary meaning.

E. “to extend the time that said switch is closed for a purpose of increasing energy transferred from said input signal”

MediaTek’s reply brief does not raise any new argument and, instead, points to its discussion of the disputed term “tend[s] away from zero time in duration.” For the reasons set forth in ParkerVision’s responsive claim construction brief (and as set forth in Section IV.B and IV.D above), this term is not indefinite and should be given its plain and ordinary meaning.

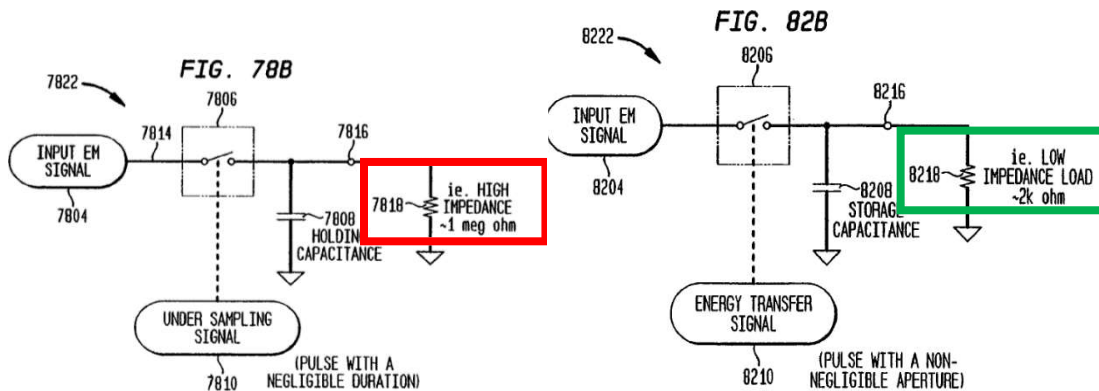
F. “a relatively low input impedance path”/ “relatively low impedance load” (’518 patent, claims 10, 13)

With regard to the term “relatively low impedance load,” to create an appearance of ambiguity where none exists, MediaTek attempts to draw a distinction between a “relatively low impedance load” and a “low impedance load.” This is a red herring. There is no distinction. The claims only recite a “relatively low impedance load.” And the patent uses “relatively low impedance load” and “low impedance load” interchangeably. *See* ’518 patent, 64:8-12, 66:58-61 (describing both terms as a load that is significant relative to the output drive impedance of the system for a

given output frequency).

The term “relatively low impedance load” is not indefinite, because the specification provides a POSITA with guidance with regard to the meaning of this term. In particular, the specification explains what it means to be a “relatively low impedance load” and what it is “relative” compared to: “a *relatively low* impedance load [is] one that is significant relative to the output drive impedance of the system for a given output frequency.” *Id.* A POSITA would understand that “significant relative to the output drive impedance of the system” refers to the loading effect of a low impedance load. *See* Steer 945 Decl., ¶ 61. Unlike a high impedance load which will have no discernible effect on the circuit, a relatively low impedance load affects the operation of the circuit. *Id.* at ¶¶ 61-62.

Indeed, the specification provides additional guidance as to the meaning of “relatively low impedance load” by comparing different types of direct down-conversion systems.



As shown above, the specification compares: (1) sample-and-hold (voltage sampling) systems (above left), and (2) energy transfer systems (above right). For example, as shown in Figure 78B, when discussing a direct down-conversion voltage sampling embodiment, the specification uses the term “high impedance load” (red) and shows 1 megohm (1,000,000 Ω) resistor as a *high* impedance load. On the other hand, as shown in FIG. 82B (above right), when discussing a direct down-conversion energy transfer embodiment, the specification uses the term “low impedance

load” (green) and shows a 2 kOhms (2,000 Ω) resistor as a *low* impedance load. From these figures and values, a POSITA would understand the load values to use that would constitute a “relatively low” impedance load, which would allow energy to be discharged from the storage capacitance 8208 when the switch is opened (OFF). *Id.*, ¶ 64.

To support its position, MediaTek cites *Semcon IP* and *Signal IP*⁶ merely because these cases use the term “relatively short” and “relatively low.” But the facts of those cases are distinguishable from the facts here. Unlike *Semcon IP* and *Signal IP*, the specification of the ’518 patent (discussed above) provides guidance to a POSITA to determine what it means for a load to be a “relatively low impedance load.”

With regard to the term “relatively low input impedance path,” MediaTek advances no new arguments. Instead, MediaTek merely re-argues that the specification provides no objective meaning for “relatively low input impedance path.” But MediaTek is wrong.

The specification provides that the input impedance is generally defined by the duty cycle of the switch module, and the impedance of the storage module. ’518 patent, 104:51-55 (“The energy transfer module has input and output impedances generally defined by (1) the duty cycle of the switch module, and (2) the impedance of the storage module, at the frequencies of interest (e.g. at the EM input, and intermediate/baseband frequencies)”). The specification then explains how controlling the pulse widths of the control signal, in conjunction with the aliasing rate, varies input impedance. For example, in the context of Figure 82A, the specification provides:

[W]hen switch 8206 is closed, the impedance looking into circuit 8202 is substantially the impedance of storage module illustrated as the storage capacitance 8208, in parallel with the impedance of the load 8212. When the switch 8206 is open, the impedance at point 8214 approaches infinity. It follows that the average impedance at point 8214 [input impedance] can be varied from the impedance of the

⁶ *Semcon IP Inc. v. Huawei Device USA Inc.*, No. 2:16-cv-00437-JRG-RSP, 2017 WL 2972193 (E.D. Tex. July 12, 2017); *Signal IP v. Am. Honda Motor Co.*, No. LA CV14- 02454 JAK, 2015 WL 5768344, at *54–56 (C.D. Cal. Apr. 17, 2015).

storage module illustrated as the storage capacitance 8208, in parallel with the load 8212, to the highest obtainable impedance when switch 8206 is open, by varying the ratio of the time that switch 8206 is open to the time switch 8206 is closed. Since the switch 8206 is controlled by the energy transfer signal 8210, the impedance at point 8214 can be varied by controlling the aperture width of the energy transfer signal, in conjunction with the aliasing rate.

Id., 106:65-107:12. Importantly, the specification informs a POSITA that widening pulse widths will lower the input impedance of the system. *See* PV Resp. Br., 33. As previously discussed, the pulses with *non-negligible* apertures have widths that are *greater than* the pulses with negligible apertures. Accordingly, a POSITA would understand that using pulses having non-negligible apertures (that tend away from zero), instead of pulses that have negligible apertures (which tend towards zero), results in a “relatively low input impedance path.”

G. “wherein said frequency of said down-converted image is substantially equal to zero” (’706 patent, claim 84)

Contrary to MediaTek’s position, the use of the term “substantially” does not automatically render a term indefinite. One must look at the context of the term. Here, given the nature of the invention of the ’706 patent, specifically related to cellular/wireless systems, the term “substantially” is a meaningful modifier that accounts for the reality that the frequency of a down-converted image may not be *exactly* zero.⁷ *See* PV Resp. Br. at 35 (citing *Playtex Products, Inc. v. Procter & Gamble Co.*, 400 F.3d 901, 907 (Fed. Cir. 2005); *Ecolab, Inc. v. Envirochem Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001)). In this context, such language is completely appropriate and not indefinite. *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002) (“Expressions such as ‘*substantially*’ are used in patent documents when warranted by the nature of the invention, in order to accommodate the minor variations that may

⁷ MediaTek faults Dr. Ricketts’s declaration for not providing any guidance to determine whether a frequency falls within the scope of “substantially equal to zero.” But Dr. Ricketts’ declaration does just that, explaining that in the context of cellular/wireless systems “signals and circuit components are not perfect.” Dkt. No. 53-9, ¶ 11.

be appropriate to secure the invention.”). Accordingly, a POSITA would understand the term “substantially” used in claim 84 denotes approximation.

The specification provides a POSITA with guidance with regard to the meaning of this term. In particular, the specification describes that the “down-converted image” can be a baseband signal with zero intermediate frequency (IF), and further informs a POSITA how to accomplish down-conversion to zero IF. Dkt. No. 53-9, ¶ 10 (citing ’706 patent, 30:51-55, 30:64-31:5); *see also, e.g.*, ’706 patent, 31:13-32. Given the imperfect nature of signals, from this description, a POSITA would understand that “substantially equal to zero” is an approximation and the frequency of the down-converted image may not be exactly zero.

To support its position, MediaTek cites to *GeoDynamics, Inc.*⁸ merely because this case uses the term “substantially equal.” But the facts of that case are distinguishable from the facts here. Unlike *GeoDynamics*, the specification of the ’706 patent (discussed above) provides guidance to a POSITA to determine what it means for a frequency of a down-converted image to be “substantially equal to zero.”

For the foregoing reasons, this term is not indefinite and should be given its plain and ordinary meaning.

H. Defendant’s argument as to other alleged indefinite terms are without merit.

MediaTek’s reply brief does not raise any new issues regarding the other disputed terms alleged to be indefinite. *See* Reply Br. at 17-18. For the reasons set forth in ParkerVision’s responsive claim construction brief, ParkerVision’s constructions should be adopted.

⁸ *GeoDynamics, Inc. v. Dynaenergetics US, Inc.*, No. 2:15-cv-1546-RSP, 2016 WL 6217181, at *14–16 (E.D. Tex. Oct. 25, 2016).

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